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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/286,418	04/06/1999	TAKAYUKI KIFUKU	Q53818	4951

7590 08/27/2003

SUGHRUE MION ZINN MACPEAK & SEAS
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WASHINGTON, DC 20037

EXAMINER

BROADHEAD, BRIAN J

ART UNIT	PAPER NUMBER
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3661

DATE MAILED: 08/27/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/286,418

Applicant(s)

KIFUKU, TAKAYUKI

Examiner

Brian J. Broadhead

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 June 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 2 and 4-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 4, 5, 8 -10, and 18-20 is/are rejected.
- 7) ☒ Claim(s) 6, 7 and 11-17 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 October 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 26.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

1. In view of the appeal brief filed on 6-2-03, PROSECUTION IS HEREBY REOPENED. New rejections are set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) request reinstatement of the appeal.

If reinstatement of the appeal is requested, such request must be accompanied by a supplemental appeal brief, but no new amendments, affidavits (37 CFR 1.130, 1.131 or 1.132) or other evidence are permitted. See 37 CFR 1.193(b)(2).

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

2. Claims 1, 2, 4, 5, 8 -10, and 18-20 are rejected under 35 U.S.C. 102(e) as being anticipated by Kifuku et al., 5740040.

As per claim 1, Kifuku et al. discloses means of computing an estimated value of static friction of the steering system based on the steering force of a driver on lines 35-

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40, on column 20; and means of compensating for the static friction based on this estimated value of static friction on lines 55-60, on column 20.

As per claim 2, Kifuku et al. discloses the static friction of the steering system is estimated by extracting the edge of the steering force detection value on lines 45-46, on column 20.

As per claim 4, Kifuku et al. discloses the static friction of the steering system is estimated by extracting the edge of a motor current on lines 25-28, on column 21.

As per claim 5, Kifuku et al discloses the static friction of the steering system is estimated by extracting a edge of the steering force detection value, the motor angular velocity, the motor back electromotive forces, the steering angular velocity, or the motor current wherein the extraction of the edge is carried out through a high frequency pass filter on lines 38-39, on column 20, and in figure 30.

As per claim 8, Kifuku et al. discloses there is an upper limit for the static friction estimated value on lines 1-5, on column 21.

As per claim 9, Kifuku et al. discloses the static friction compensation having a term proportional to the static friction estimated value obtained by the positive feedback of the static friction estimated value is computes and the static friction of the steering system is compensated by the static friction compensation on lines 47-52, on column 20.

As per claim 10, Kifuku et al. discloses the gain of the positive feedback is set such that the static friction estimated value and the motor output torque become almost

equal to each other on lines 47-52, column 20. Compensating for a friction is producing a force to counteract the frictional force. They would be equal but opposite in direction.

As per claim 18, Kifuku et al. discloses the dynamic friction or inertia of the steering system is compensated based on the angular velocity or angular acceleration of the motor or steering in figure 31, item 13.

As per claim 19 and 20, Kifuku et al. discloses a term for compensating for dynamic friction, a term for compensating for static friction, and a term for the nonlinearity of the motor are weighed so that at least one of them is used in figure 31.

Response to Arguments

2. Applicant's arguments with respect to claims 1, 2, and 4-20 have been considered but are moot in view of the new ground(s) of rejection. After further review of the prior art it is the examiner's position that Kifuku et al. discloses the claimed invention as set forth above. This rejection was presented earlier in prosecution but was changed in response to applicant's argument. After reviewing that argument, it is found not to be convincing. The argument was presented in paper 19, filed on 4-29-02 by the applicant. The argument consisted of the position that Kifuku et al. did not disclose the same steering force detection means because the applicant's invention relied on steering torque to estimate steering force of the driver and not motor angular velocity as in Kifuku et al. However, after reviewing the specification it has been determined that the applicant discloses the steering force can be found using motor angular velocity as disclosed in Kifuku et al. on lines 2-7, on page 6.

Allowable Subject Matter

3. Claims 6, 7, 11, 12, 13, 14, 15, 16, and 17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

4. The following is a statement of reasons for the indication of allowable subject matter: The prior art of record does not disclose the time constant of the high frequency pass filter is made almost equal to the mechanical time constant or acceleration constant of the motor; the static friction of the steering system is estimated by multiplying an extracted value of the edge by a predetermined function of motor angular velocity, motor back electromotive force or steering angular velocity; and the static friction compensation obtained through the means of compensating for static friction is obtained from a term compensating for the non-linearity of the motor or motor reduction gear.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian J. Broadhead whose telephone number is 703-308-9033. The examiner can normally be reached on Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William A. Cuchlinski can be reached on 703-308-3873. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-7687 for regular communications and 703-305-7687 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1113.

BJB
August 21, 2003


JOHN BEAULIEU
PRIMARY EXAMINER